AMSER Case of the Month April 2026

44 y.o. AA F presents with fatigue, tiredness, and inability to lose weight

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Patient Presentation

- 44 yo AA F presents to FM clinic for routine follow up and yearly influenza vaccination
- PMHx: HTN and Severe Obesity
- Patient has been unable to lose weight despite lifestyle changes
- Been more fatigued and tired lately
- HTN controlled on amlodipine (5 mg). No other complaints
- On physical exam, a small nodule was palpated on the right thyroid

Pertinent Labs

	Initial visit (March)	Started treatment (May)	Ordered imaging (July)	Ref. Ranges
TSH	24.420 ▲	17.517 ▲	10.566 ▲	0.40-4.00 µIU/mL
T3, Free		2.60	2.30	2.30-4.20 pg/mL
Free T4	0.59 ▼	0.71	0.87	0.71-1.51 ng/dL

What Imaging Should We Order?

ACR Appropriateness Criteria

Thyroid Ultrasound ordered by the FM physician

Primary hypothyroidism. Initial imaging.

Procedure	Adult RRL	Peds RRL	Appropriateness Category
US thyroid	0 mSv O	0 mSv [ped] O	Usually not appropriate
MRI neck without and with IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
MRI neck without IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
CT neck with IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	Usually not appropriate
CT neck without and with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
CT neck without IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	Usually not appropriate
I-123 uptake scan neck	1-10 mSv ☢☢☢		Usually not appropriate
FDG-PET/CT whole body	10-30 mSv ☢☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
I-131 uptake scan and Tc-99m pertechnetate scan neck	10-30 mSv ☢☢☢☢		Usually not appropriate

Palpable thyroid nodule. Not goiter. Euthyroid. Initial imaging.

Procedure	Adult RRL	Peds RRL	Appropriateness Category
US thyroid	0 mSv O	0 mSv [ped] O	Usually appropriate
CT neck with IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	May be appropriate
CT neck without IV contrast	1-10 mSv ☢☢☢	0.3-3 mSv [ped] ☢☢☢	May be appropriate
MRI neck without and with IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
MRI neck without IV contrast	0 mSv O	0 mSv [ped] O	Usually not appropriate
CT neck without and with IV contrast	1-10 mSv ☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
I-123 uptake scan neck	1-10 mSv ☢☢☢		Usually not appropriate
FDG-PET/CT whole body	10-30 mSv ☢☢☢☢	3-10 mSv [ped] ☢☢☢☢	Usually not appropriate
I-131 uptake scan and Tc-99m pertechnetate scan neck	10-30 mSv ☢☢☢☢		Usually not appropriate

Primary hypothyroidism with a palpable thyroid nodule fits partially into both categories

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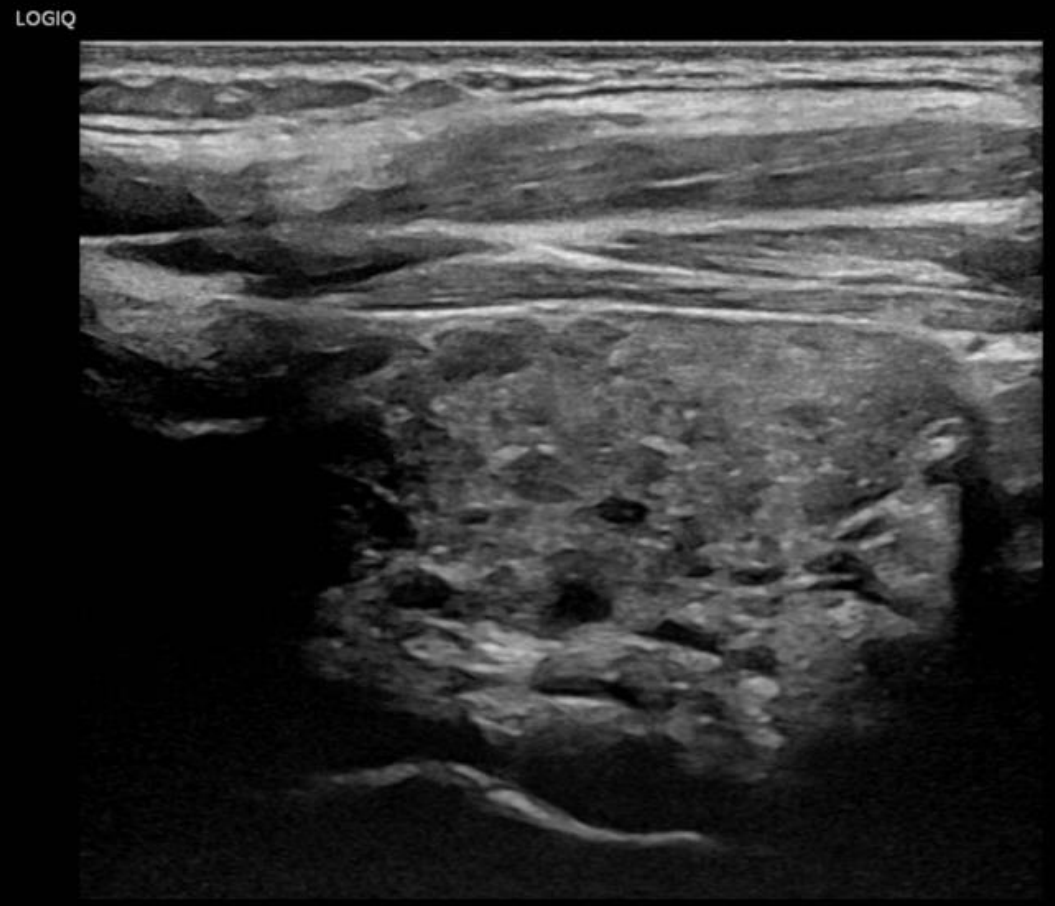
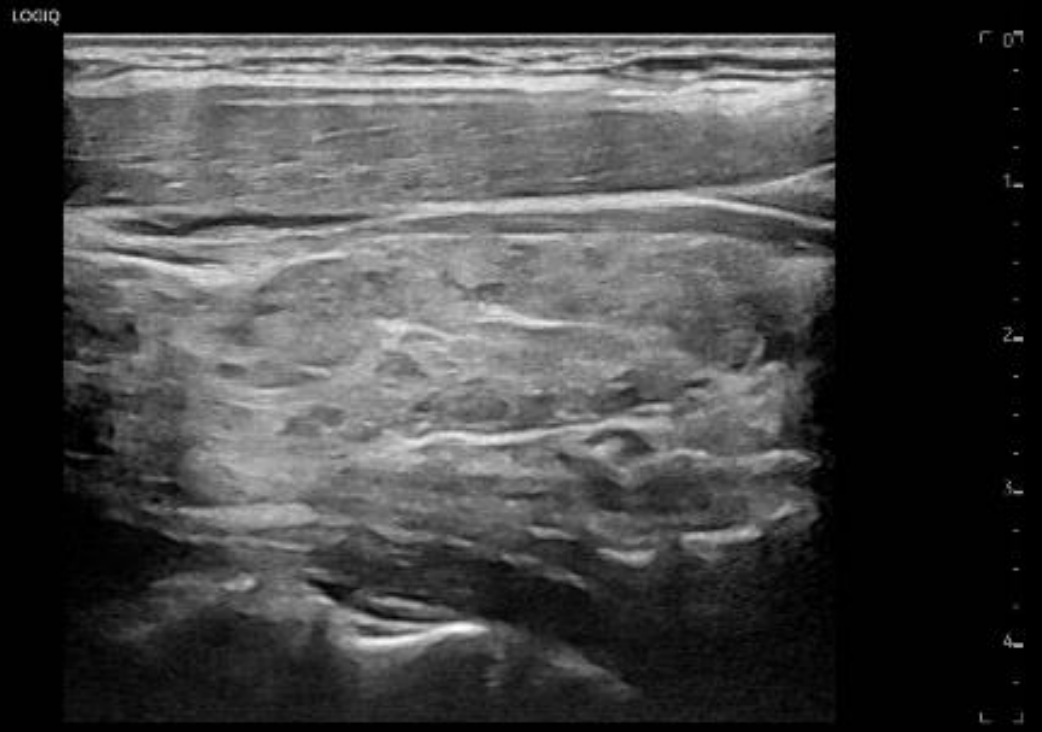
Findings (unlabeled)



SAG RIGHT THYROID LAT-MED



SAG LEFT THYROID LAT-MED

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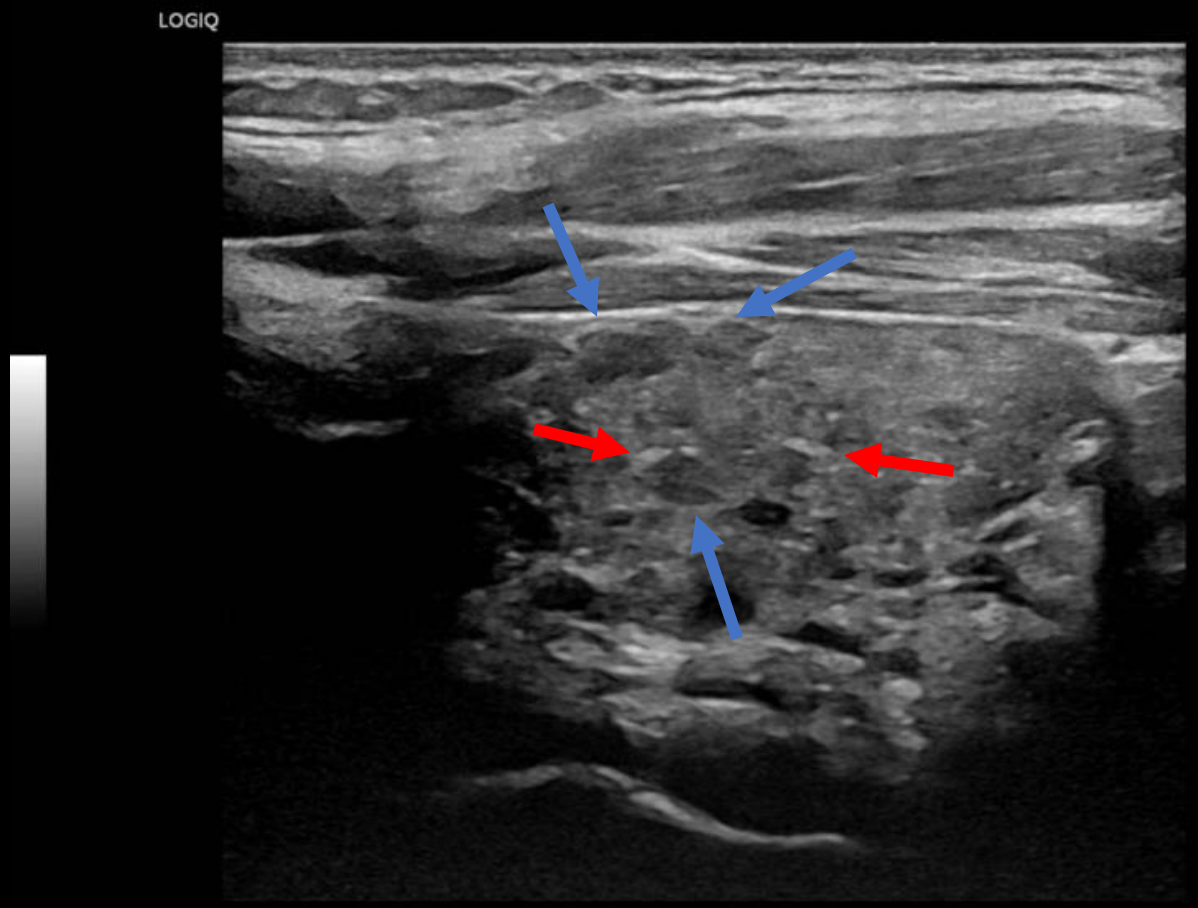
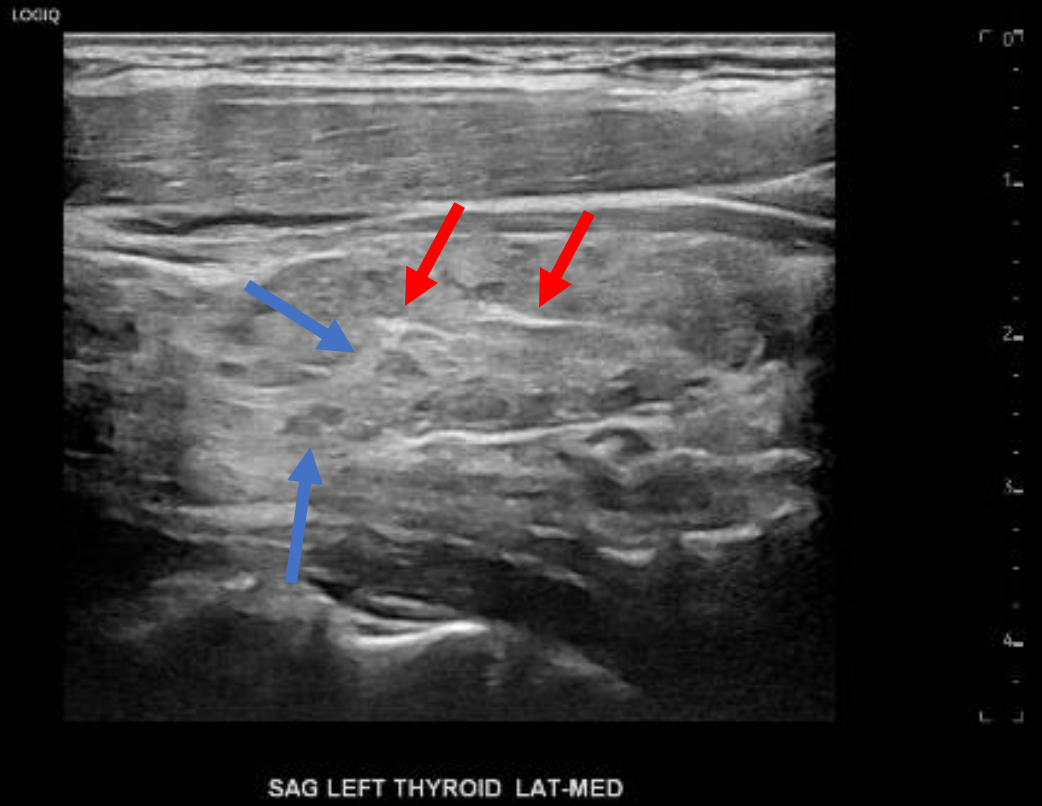
Findings (labeled)

Hypoechoic micronodules

Echogenic fibrous septations





Final Dx:

Hashimoto’s Thyroiditis

Hashimoto's Thyroiditis

- Autoimmune lymphocytic infiltration of the thyroid
- + anti-TPO and/or anti-thyroglobulin (5)
- Ranges from euthyroid to hypothyroid (4,5)
- Most common cause of hypothyroidism in countries with adequate dietary iodine (3)
- Heavily female predominant – mostly females over 40 but can present in children (4)
- Increased risk of thyroid malignancies like follicular or papillary carcinoma and lymphoma (4)

Sonographic Findings in Hashimoto's Thyroiditis

- Common sonographic findings of Hashimoto's thyroiditis include:
  - Heterogenous, hypoechoic pattern with focal or diffuse glandular enlargement. Multiple micronodules and pseudolobulated echogenic fibrous septae are commonly seen and have colloid. (3,4,5)
  - Giraffe pattern: Globular areas of hyperechogenicity surrounded by linear thin areas of hypoechogenicity (6)
  - White-Knight sign: hyperechoic nodules on a hypoehoic background (6)
- Hypoechogenicity, heterogeneity, and pseudonodular hypoechoic infiltration were associated with significantly higher TPOAb activity (5)
- Color Doppler often shows diffuse hypervascularity which can look similar to "thyroid inferno" in Graves' disease. (3,4)
- Later stages of the disease often show a smaller, atrophic thyroid with intense fibrosis and reduced vascularity. (3,4)
- Abnormal sonographic findings remain unchanged for life even after treatment (4)
- VESINC (volume, echogenicity, sonographic texture, pseudonodular hypoechoic infiltration, nodules, and cysts) is a proposed standardized classification of Hashimoto's thyroiditis on ultrasound (5)

Focal Nodularity and Hashimoto's Thyroiditis

Hashimoto's thyroiditis can present with focal nodularity that can be benign or malignant (1,2,4,5)

- Benign features – iso or hyperechoic (best predictor), hypoechoic halo, no calcification, "ring down" or "comet tail" artifact, perinodular flow or spoke-and-wheel-like appearance on color Doppler (2,4)
- Rarely microcalcifications can be seen in benign conditions of the thyroid such as Hashimoto's thyroiditis (4)
- Malignant features –hypoechoic (best predictor), solid, all types of calcifications (microcalcifications, macrocalcifications, eggshell, and nonspecific tiny bright reflectors), irregular margins, local invasion, intra nodular vascularity (central hypervascularity) (2,4)

Looking for abnormalities in cervical lymph nodes, especially the prelaryngeal "Delphian" lymph node just anterior to the thyroid isthmus can help distinguish malignancy (4)

FNA of nodules or lymph nodes and/or PET scans can best differentiate inflammatory responses vs malignancy (4,5)

References:

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